

In the Claims:

1. (currently amended) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

means for separating ~~a separator having a structure to~~ at least partially ~~separate~~ said portion of said epithelial material from said cornea; and
a rotating drum positioned relative to said separator so as to be able to receive said separated portion of said epithelial material from said separator.

2. (previously presented) The device as claimed in claim 1 further comprising a seating positioned on said cornea, wherein said seating has an internal diameter of at least about 10 mm.

3. (currently amended) The device as claimed in claim 1 where said means for separating ~~separator~~ is not sharp enough to incise corneal tissue while separating said portion of said epithelial material from said cornea.

4. (currently amended) The device as claimed in claim 24 where said means for separating ~~separator~~ is not sharp enough to incise corneal tissue while separating said portion of said epithelial material from said cornea.

5. (currently amended) previously presented) The device as claimed in claim 1 further comprising a movement device that controls movement of said means for separating ~~separator~~.

6. (currently amended) The device as claimed in claim 24 further comprising a movement device that controls movement of said means for separating separator along said determined path of travel.

7. (canceled).

8. (previously presented) The device as claimed in claim 2 where said seating includes a port through which suction is applied to ensure stable mounting of said seating to said cornea.

9. (currently amended) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a means for separating separator having a structure to at least partially separate said portion of said epithelium material from said cornea, wherein said means for separating is capable of oscillating separator oscillates with a frequency ranging from about 10Hz to about 10KHz; and

a rotating drum positioned relative to said means for separating separator so as to be able to receive said separated portion of said epithelial material from said means for separating separator and to be able to roll said separated portion of said epithelium material at least partially upon said drum.

10. (currently amended) The device as claimed in claim 9 where said means for separating is capable of oscillating separator oscillates via electromagnetic forces acting on said means for separating separator.

11. (currently amended) The device as claimed in claim 9 where said means for separating is capable of oscillating ~~separator oscillates~~ via piezoelectric forces acting on said means for separating ~~separator~~.

Claim 12 (canceled)

13. (currently amended) The device as claimed in claim 1 further comprising:

a separator support attached to said means for separating ~~separator~~; and

a member that engages said separator support, where a motion of said separator support is generated in response to said member moving relative to said separator support and said member travels along a track.

14. (currently amended) The device as claimed in claim 2, further including a separator support coupled to said means for separating ~~separator~~, wherein said separator support is movable along a track of said seating.

15. (currently amended) The device as claimed in claim 14, further including a movement device coupled to said separator support, wherein said movement device is capable of moving ~~moves~~ said separator support along said track.

16. (canceled).

17. (previously presented) The device as claimed in claim 1 wherein said drum includes a diameter ranging from about 3 to about 9 mm.

18. (previously presented) The device as claimed in claim 1 where said drum is coated with at least one of a hydrating substrate and a conditioning substrate.

19. (previously presented) The device as claimed in claim 18 where said at least one of said hydrating substrate and conditioning substrate is selected from the group consisting of a HEMA contact lens, a tissue culture media, a silicone and a biocompatible hydrogel.

20. (previously presented) The device as claimed in claim 18 where said at least one of said hydrating substrate and said conditioning substrate can be removed from said drum after said portion of said epithelial material is received by said drum.

21. (previously presented) The device as claimed in claim 1 where said drum includes a hollow portion.

22. (previously presented) The device as claimed in claim 21 where a surface of said drum includes a hole.

23. (previously presented) The device as claimed in claim 22 where said hole communicates with said hollow portion of said drum which is in fluid connection with an air suction source.

24. (currently amended) The device as claimed in claim 2, further comprising a separator support that is slidably engaged to a track of said seating to guide said means for separating separator on a determined path of travel.

25. (currently amended) The device as claimed in claim 1, further comprising an oscillation device coupled to said means for separating separator that is capable of providing ~~provides~~ motion and vibration to said means for separating separator.

26. (previously presented) The device as claimed in claim 1, further comprising a seating on said cornea, where said seating includes a port through which suction is applied to said cornea to ensure stable mounting of said seating on said cornea.

27. (currently amended) The device as claimed in claim 1, wherein said means for separating separator comprises a dull edge that separates said epithelial layer from said cornea.

28. (previously presented) The device as claimed in claim 1, wherein said drum lacks graduations.

29. (currently amended) The device as claimed in claim 1, wherein there is only one means for separating separator.

30. (currently amended) The device as claimed in claim 1, wherein said means for separating separator comprises an edge that is translatable

~~translates~~ along a plane and said drum is rotatable ~~rotates~~ about an axis that is parallel to said plane.

31. (currently amended) The device as claimed in claim 1, wherein said drum and said means for separating separator are connected to one another, and said means for separating separator is capable of traveling ~~travels~~ across said cornea as said portion of said epithelial material is separated by said means for separating separator.

32. (currently amended) The device as claimed in claim 1, further comprising a seating which rests on said cornea, wherein said seating, said means for separating separator and said drum are connected to one another.

33. (currently amended) The device as claimed in claim 32, further comprising a moving device that is capable of moving ~~moves~~ said means for separating separator across said seating as said separator separates said portion of said epithelial material from said cornea.

34. (currently amended) The device as claimed in claim 13, wherein said rotating drum is rotatable via ~~rotates by~~ a friction between said member and said track as said means for separating separator moves along a second track of said separator support.

35.(previously presented) The device as claimed in claim 13, wherein said member is a rotating member.

36. (currently amended) The device as claimed in claim 13, wherein said means for separating separator is capable of oscillating ~~oscillates~~ during said movement across said seating.

37. (currently amended) The device as claimed in claim 27, wherein said means for separating separator is movable ~~moves~~ across said cornea during separation of said portion of said epithelial material and said dull edge is unable to cut said cornea as said means for separating separator moves across said cornea during said separation of said portion of said epithelial material.

38. (currently amended) The device as claimed in claim 1, further comprising:

an engagement surface spaced from said drum; and

a moving device that is capable of moving ~~moves~~ said means for separating separator and said engagement surface across said cornea, wherein during such movement said engagement surface flattens said portion of said epithelial material ~~prior to said portion of said epithelial material being separated by said separator from said cornea.~~

39. (currently amended) The device as claimed in claim 38, wherein said means for separating separator is unable to substantially incise said cornea as said means for separating separator separates said portion of said epithelial material.

40. (previously presented) The device as claimed in claim 13, wherein said member is a gear and said track is a toothed rail that is engaged by said gear when said gear rotates.

41. (previously presented) The device as claimed in claim 1, wherein said separated portion of said epithelial material remains a part of said epithelial material during said separating.

42. (previously presented) The device as claimed in claim 9, wherein said separated portion of said epithelial material remains a part of said epithelial material during said separating.

43. (currently amended) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

means for separating ~~a separator having a structure to~~ at least partially separate said portion of said epithelial material from said cornea; and
a movable ~~moving~~ surface that is movable ~~moves~~ relative to said means for separating ~~separator~~ and is positioned so as to be able to receive said separated portion of said epithelial material.

44. (previously presented) The device according to claim 43, wherein said moving surface substantially securely holds said separated portion of said epithelial material.

45. (previously presented) The device according to claim 43, wherein said moving surface has a structure that substantially preserves said separated portion of said epithelial material.

46. (previously presented) The device according to claim 44, wherein said moving surface has a structure that substantially preserves said separated portion of said epithelial material.

47. (previously presented) The device according to claim 46, wherein said moving surface comprises a coating.

48. (previously presented) The device according to claim 47, wherein said coating is a hydrating substance that hydrates said separated portion of said epithelial material.

49. (previously presented) The device according to claim 47, wherein said coating is a conditioning substance that conditions said separated portion of said epithelial material.

50. (previously presented) The device according to claim 47, where said coating is selected from the group consisting of: a HEMA a contact lens, a tissue culture media, a silicone and a biocompatible hydrogel.

51. (previously presented) The device according to claim 44, further comprising a suction source in fluid communication with said moving surface for assisting said moving surface in holding said separated portion of said epithelial material.

52. (previously presented) The device according to claim 51, wherein said moving surface defines at least one aperture through which said suction source applies suction.

53. (currently amended) The device according to claim 43, wherein said movable ~~moving~~ surface is capable of moving ~~moves~~ in a rotational direction about an axis of rotation.

54. (currently amended) The device according to claim 43, wherein said separator means for separating is capable of separating separates a lower surface of said portion of said epithelial material from said cornea and said movable ~~moving~~ surface is positioned so that said lower surface is capable of lying ~~lies~~ upon said movable ~~moving~~ surface.

55. (previously presented) The device according to claim 44, wherein said separator separates a lower surface of said portion of said epithelial material from said cornea and said moving surface is positioned so that said lower surface lies upon said moving surface.

56. (currently amended) The device according to claim 43, wherein said means for separating separator ~~has a structure such that it~~ is not able to substantially cut corneal tissue during separation of said portion of said epithelial material by said means for separating separator.

57. (currently amended) The device according to claim 43, further comprising a seating that engages said means for separating separator and defines a path of travel of said means for separating separator.

58. (previously presented) The device according to claim 47, wherein said coating is removable.

59. (previously presented) The device as claimed in claim 43, wherein said separated portion of said epithelial material remains a part of said epithelial material.

60. (currently amended) The device as claimed in claim 43, wherein said movable moving surface is movable ~~moves~~ independently of said separator.

61. (previously presented) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure that at least partially separates a portion of said epithelial material of said cornea from said cornea; and

a holding device having a structure for holding said portion of said epithelial material in a substantially secure fashion after said portion has been separated from said cornea by said separator.

62. (previously presented) The device as claimed in claim 61, wherein said separated portion of said epithelial material remains a part of said epithelial material.

63. (previously presented) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure that at least partially separates said portion of said epithelial material of said cornea from said cornea; and

a preserving device that receives said portion of said epithelial material from said separator and preserves said portion of said epithelial material, such that cell loss associated with said portion of said epithelial material received by said preserving device is reduced when compared to the case where said portion of said epithelial material is not received by said preserving device.

64. (previously presented) The device as claimed in claim 63, wherein said separated portion of said epithelial material remains a part of said epithelial material.

65. (new) The device as claimed in claim 1, further comprising:

an engagement surface spaced from said means for separating;
and

a moving device that is capable of moving said means for separating across said cornea, wherein during such movement said engagement surface flattens said portion of said epithelial material.

66. (new) The device of claim 1, wherein said means for separating comprises a dull edge that has a dimension that is greater than the size of a radius of a pupil of an eye that includes said epithelial material.

67. (new) The device of claim 1, wherein said means for separating has a structure so as to separate said portion of said epithelial material from said cornea without the assistance of any chemicals .

68. (new) The device of claim 1, further including a movement device, wherein said movement device is capable of generating through said means for separating a mechanical force that is sufficient to separate said portion of said epithelial material from said cornea, but insufficient to cut said corneal stroma over a distance that is greater than a radius of a pupil.

69. (new) The device of claim 1, further including a movement device, wherein said movement device is capable of causing said means for separating

to move a distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

70. (new) The device of claim 69, wherein said means for separating separates said portion of said epithelial material and does not cut said corneal stroma while moving along said distance.

71. (new) The device of claim 69 wherein said movement device is capable of moving said means for separating so that said means for separating is capable of moving along a majority of a length of a track wherein said means for separating does not cut said corneal stroma anywhere along said majority of said length of said track, wherein said track corresponds to at least a radius of a pupil of an eye that includes said epithelial material

72. (new) The device of claim 71, wherein a length of said track is at least 6mm.

73. (new) The device as claimed in claim 43, further comprising:

an engagement surface spaced from said means for separating;

and

a moving device that is capable of moving said means for separating across said cornea, wherein during such movement said engagement surface flattens said portion of said epithelial material.

74. (new) The device of claim 43, wherein said means for separating comprises a dull edge that has a dimension that is greater than the size of a radius of a pupil of an eye that includes said epithelial material.

75. (new) The device of claim 43, wherein said means for separating has a structure so as to separate said portion of said epithelial material from said cornea without the assistance of any chemicals .

76. (new) The device as claimed in claim 43 further comprising:

a seating positioned on said cornea;

a separator support coupled to said means for separating, wherein said separator support is movable along a track of said seating; and

a movement device coupled to said separator support, wherein said movement device is capable of moving said separator support along said track.

77. (new) The device of claim 76, wherein said movement device is capable of generating through said means for separating a mechanical force that is sufficient to separate said portion of said epithelial material from said cornea, but insufficient to cut said corneal stroma.

78. (new) The device of claim 76, wherein said movement device causes said means for separating to move a distance across said cornea that

corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

79. (new) The device of claim 78, wherein said movement device is capable of moving said means for separating along a distance of at least 6 mm, wherein said means for separating is capable of separating said portion of said epithelial material and does not cut said corneal stroma while moving along said distance.

80. (new) The device of claim 76 wherein said movement device is capable of moving said means for separating so that said means for separating is capable of moving along a majority of a length of said track wherein said means for separating does not cut said corneal stroma anywhere along said majority of said length of said track.

81. (new) The device of claim 76, wherein a length of said track is at least 6mm.

82. (new) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelial material from said cornea; and

a rotating drum positioned relative to said separator so as to be able to receive said separated portion of said epithelial material from said separator.

83. (new) The device of claim 82, further including a movement device, wherein said movement device is capable of causing said separator to move a distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

84. (new) The device of claim 82, wherein said separator comprises an edge that contacts said epithelial material so as to at least partially separate said portion of said epithelial material from said cornea.

85. (new) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelium material from said cornea, wherein said separator is capable of oscillating with a frequency ranging from about 10Hz to about 10KHz; and

a rotating drum positioned relative to said separator so as to be able to receive said separated portion of said epithelial material from said separator and to be able to roll said separated portion of said epithelium material at least partially upon said drum.

86. (new) The device of claim 85, further including a movement device, wherein said movement device is capable of causing said separator to move a

distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

87. (new) The device of claim 85, wherein said separator comprises an edge that contacts said epithelial material so as to at least partially separate said portion of said epithelial material from said cornea.

88. (new) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelial material from said cornea; and

a movable surface that is movable relative to said separator and is positioned so as to be able to receive said separated portion of said epithelial material.

89. (new) The device of claim 88, further including a movement device, wherein said movement device is capable of causing said separator to move a distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

90. (new) The device of claim 88, wherein said separator comprises an edge that contacts said epithelial material so as to at least partially separate said portion of said epithelial material from said cornea.

91. (new) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a plate having a structure to at least partially separate said portion of said epithelial material from said cornea; and

a rotating drum positioned relative to said plate so as to be able to receive said separated portion of said epithelial material from said plate.

92. (new) The device of claim 91, further including a movement device, wherein said movement device is capable of causing said plate to move a distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

93. (new) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a plate having a structure to at least partially separate said portion of said epithelium material from said cornea, wherein said plate is capable of oscillating with a frequency ranging from about 10Hz to about 10KHz; and

a rotating drum positioned relative to said plate so as to be able to receive said separated portion of said epithelial material from said plate and to be able to roll said separated portion of said epithelium material at least partially upon said drum.

94. (new) The device of claim 93, further including a movement device, wherein said movement device is capable of causing said plate to move a

distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.

95. (new) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a plate having a structure to at least partially separate said portion of said epithelial material from said cornea; and

a movable surface that is movable relative to said plate and is positioned so as to be able to receive said separated portion of said epithelial material.

96. (new) The device of claim 95, further including a movement device, wherein said movement device is capable of causing said plate to move a distance across said cornea that corresponds to at least a radius of a pupil of an eye that includes said epithelial material.